ABSTRACT OF THE DISCLOSURE

A radioisotope generating apparatus according to the present invention comprises a nuclear reaction section an interior of which is retained in a vacuum; a source supply section for supplying a source material R consisting of a nuclide necessary for generation of the radioisotope, to the nuclear reaction section, an optical system for emitting pulse laser light toward the source material R supplied into the nuclear reaction section and thereby brought into a dispersed state, thereby inducing a nuclear reaction in the source material R to generate the radioisotope, a product nucleus collecting section for collecting a molecule P_I having a nucleus of the radioisotope generated in the nuclear reaction section, and a radiation shielding system for preventing outside leakage of radiations generated in the nuclear reaction section. This permits the position of a reaction field of the nuclear reaction to be fixed in a specific small region inside the nuclear reaction section, whereby the space necessary for the nuclear reaction section can be largely decreased.